Acta Arachnologica, 50(1): 15–20, September 28, 2001

A new damaeid mite of the genus *Dyobelba* (Acari: Oribatida: Damaeidae) from Korea

Badamdorj Bayartogtokh[1], Seong-Sik Choi[2] & Jun-ichi Aoki[3]

[1] *Department of Zoology, Faculty of Biology, National University of Mongolia, Ulaanbaatar, 210646 Mongolia*
[2] *College of Agriculture, Wonkwang University, Iksan, 570–749 Korea*
[3] *Kanagawa Prefectural Museum of Natural History, Odawara, 250–0031 Japan*

Abstract — A new species of oribatid mite belonging to the genus *Dyobelba* is described from Korea. *Dyobelba paucituberculata* sp. nov. can be distinguished from the other species of *Dyobelba* by the complete absence of prodorsal enantiophyses *B, D*, epimeral and dorsosejugal enantiophyses *E2, V* and discidium, the presence of microtubercles at the bases of epimeral setae of *1, 2, 3*-series and *4b*, and the presence of two setae on trochanter IV. Some information on generic diagnosis and distribution of hitherto known species of *Dyobelba* are given.

Key words — Oribatida, Damaeidae, *Dyobelba*, new species, Korea

Introduction

The oribatid mite genus *Dyobelba* was established by Norton (1978) with *Oribata carolinensis* Banks 1947 as the type species. Members of this genus are known primarily from litter of various types of forests, mosses, decaying wood and organic horizon of soils. At the present moment five species (*D. armata* Norton, *D. biclavata* Wang & Norton, *D. carolinensis* (Banks), *D. reevesi* Norton & Ryabinin and *D. tectopediosa* (Jacot)) are known and they are distributed in the United States (Jacot 1938; Banks 1947; Norton 1978; Marshall et al. 1987; Norton & Ryabinin 1994), Chile (Norton 1979), China (Wang & Norton 1993) and Mongolia (Bayartogtokh 2000).

In the present work a new species, *Dyobelba paucituberculata* sp. nov. is described from Korea, and it is the second representative of *Dyobelba* recorded from Palaearctic Region.

The morphological terminology used in this paper is based on that (with a few modifications) developed by Grandjean (1960) as applied by Norton (1978). Body length is measured in lateral view, from the tip of the rostrum to the posterior edge of the ventral plate, to avoid discrepancies caused by different degrees of notogastral distension. Notogastral length is measured in lateral aspect, from the anterior to the posterior edge. Notogastral width refers to the maximum width in dorsal aspect. Hysterosomal dorso-ventral thickness is measured in lateral aspect, from the edge of the ventral plate to the dorsal edge of the notogaster in postgenital transect. Notogastral thickness is measured in lateral aspect, from the dorsal to the ventral edge of the notogaster. Length of leg segments is measured in lateral aspect, and includes the portion inserted into the next segment.

Genus ***Dyobelba*** Norton 1978

Tibiae II and III each with associated seta *d* coupled with solenidion φ(in a single species *D. reevesi* Norton & Ryabinin, seta *d* lacking on tibia II); trochanter IV with one or two setae; femora III and IV mostly with 4 setae on each (five setae in *D. biclavata*); prodorsal enantiophyses *B* and *D* usually present, but completely absent in *D. paucituberculata* sp. nov.; spinae adnatae mostly present (absent only in *D. armata*); propodolateral apophyses *P* mostly absent, but rarely present; ventral enantiophyses *S* present; discidium present, but absent in *D. paucituberculata* sp. nov.; epimeral setal formula 3-1-3-4 or 3-3-3-4.

In a recent classification of the oribatid mite genera, Balogh & Balogh (1992) considered that spinae adnatae are absent in *Dyobelba*. However, most of the known species of this genus (other than *D. armata*) have

conspicuously developed spinae adnatae, which are directed anteromediad or anterolaterad.

Dyobelba paucituberculata sp. nov.
(Figs. 1–3)

Diagnosis. Medium sized species with general characters of *Dyobelba*. Propodolateral apophysis *P* absent; tubercles of prodorsal enantiophyses *B* and *D* completely absent; all prodorsal setae smooth, except only very finely barbed lamellar seta; sensillus very long, thin, smooth, flagellate distally; notogastral setae short, thin, smooth, lighter on color; spinae adnatae moderate in size, directed anteroventrad; tectum of podocephalic

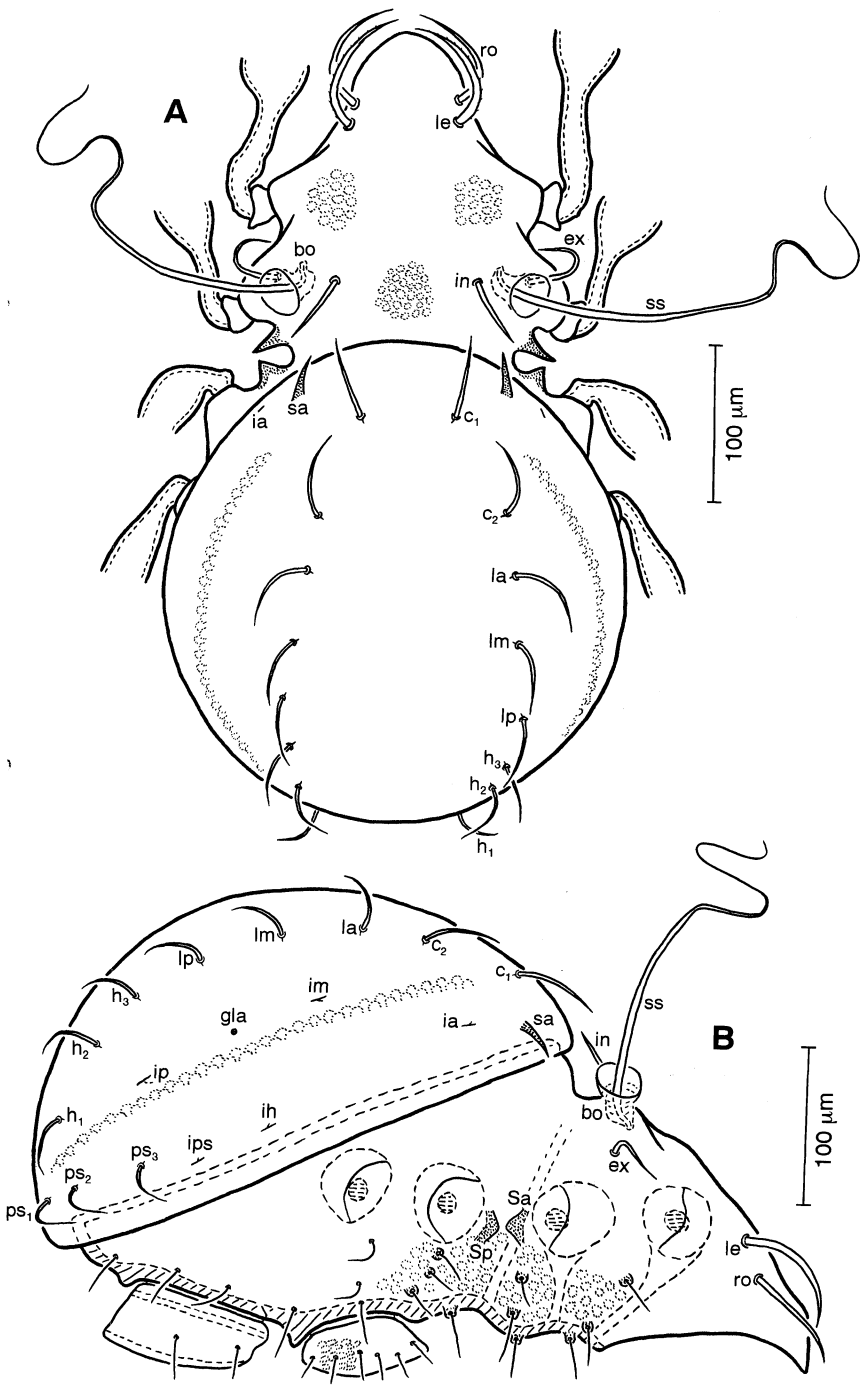

Fig. 1. *Dyobelba paucituberculata* sp. nov., holotype. A: Dorsal view; B: Lateral view.

fossa not projected; ventral enantiophyses *E2* and *V* completely absent; enatiophysis *S* well developed; epimeral regions II and III with three setae on each and IV with four setae; epimeral setae of *1, 2, 3* -series and *4b* situated on distinctly developed microtubercles; discidium absent; setae *d* on genua I-III slightly longer and thicker than their coupled solenidia σ; solenidia φ of tibiae II and III slightly shorter than their associated setae *d* ; trochanter IV with two setae.

Measurements. Body length 476–512 μm; length of notogaster 324–348 μm; width of notogaster 292–328 μm; dorsoventral thickness of hysterosoma 264–272 μm.

Integument. Body color yellowish brown. Surface of body and leg segments with very thick granular cerotegument. Conspicuous microtubercles present on prodorsum and around leg acetabula. Adherent debris or exuvial scalps absent.

Prodorsum. Rostrum rounded in dorsal view, but conspicuously projected in lateral view. Rostral seta (*ro*) medium long, relatively thick, smooth. Lamellar

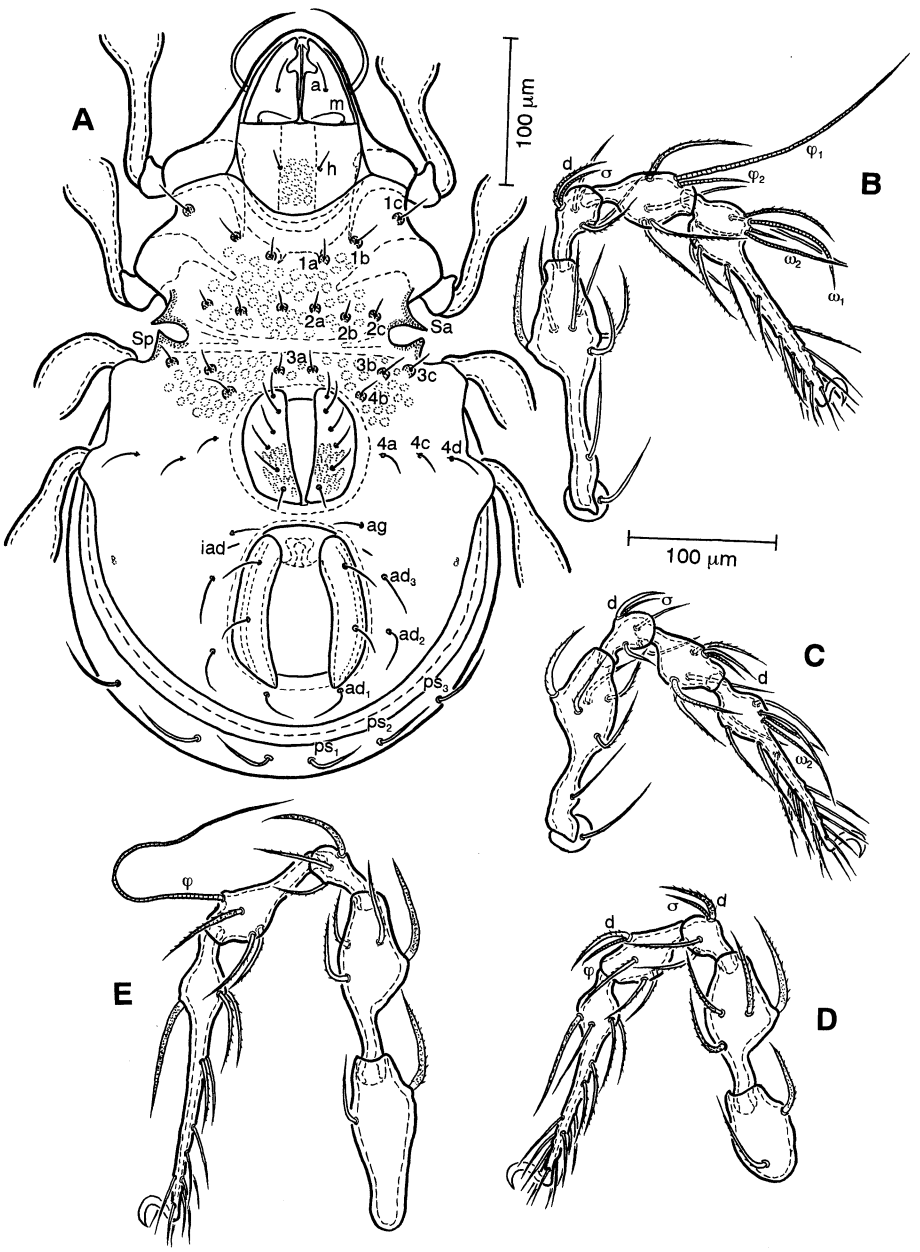

Fig. 2. *Dyobelba paucituberculata* sp. nov., holotype. A: Ventral view; B: Leg I (right, antiaxial aspect); C: Leg II (right, antiaxial aspect); D: Leg III (right, antiaxial aspect); E: Leg IV (right, antiaxial aspect)

seta (*le*) slightly longer and thicker than *ro*, with very fine barbs on its lateral margin. Interlamellar seta (*in*) relatively short, smooth, directed posterolaterally. Exobothridial seta (*ex*) thin, nearly as long as *in*. Sensillus (*ss*) thin, smooth, very long, finely attenuate and strongly flagellate distally. Bothridium (*bo*) irregular funnel-shaped, directed posterolaterad. Tubercles of prodorsal enantiophyses *B* and *D* completely absent. Propodolateral apophysis *P* absent (Figs. 1A, 3A & B).

Notogaster. Almost circular viewed perpendicular to circumgastric scissure, nearly as long as wide. Thickness of notogaster 160–176 μm; dorsal contour evenly rounded. Spinae adnatae (*sa*) moderate in size, in dorsal aspect directed anteromediad, but in lateral aspect strongly curved anteroventrad; distance between their bases nearly as long as that of notogastral setae *la-la*. Notogastral setae short, thin and smooth, not darkly pigmented, but lighter in color. Notogastral lyrifissures *ia, im, ih, ip, ips* and opisthosomal gland opening (*gla*) well visible in lateral view (Figs. 1A, B, 3A, C & D).

Gnathosoma. Infracapitular mentum slightly wider than long, with a few microtubercles. Hypostomal setae

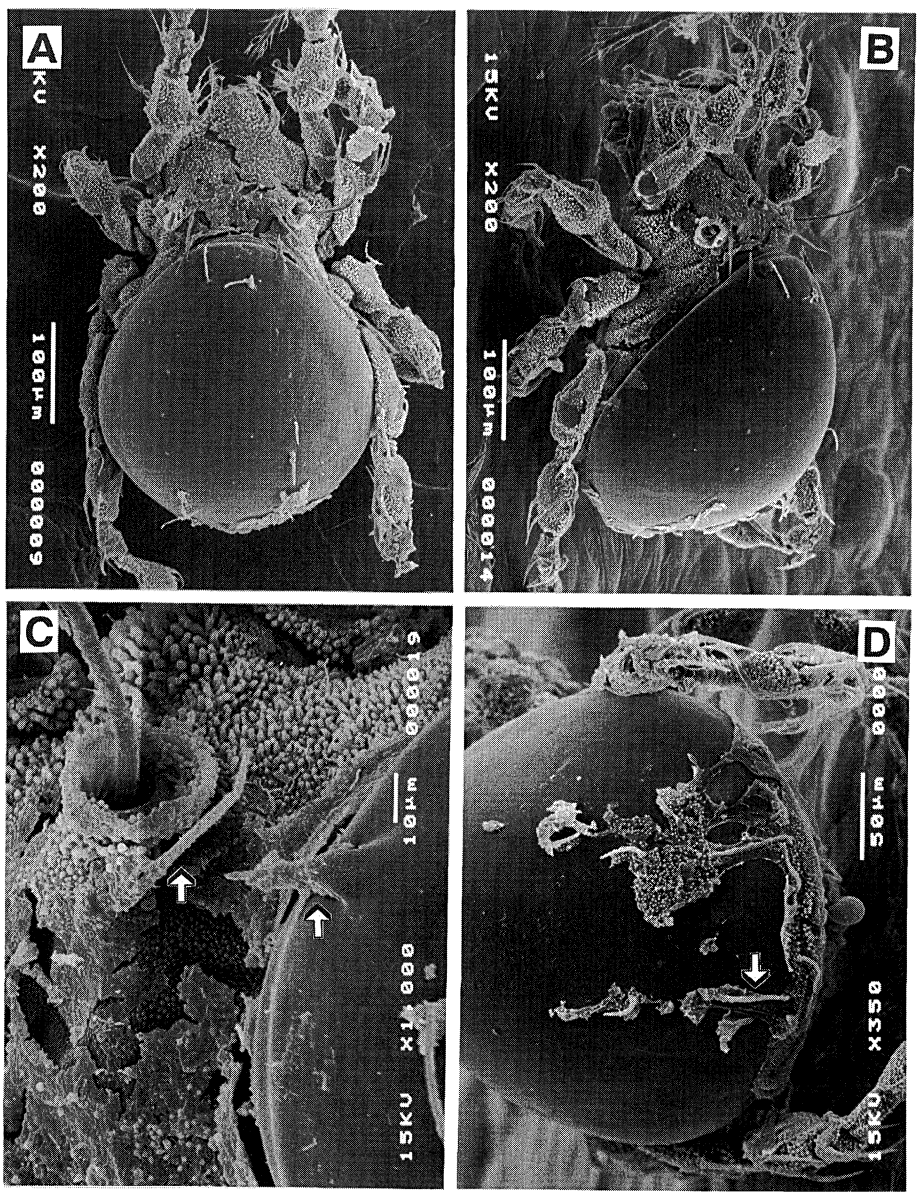

Fig. 3. *Dyobelba paucituberculata* sp. nov. A: Dorsal view; B: Lateral view; C: Dorsosejugal region, spina adnata and interlamellar seta are indicated by arrow; D: Posterior view of notogaster (cerotegument partly removed), seta *h3* is indicated by arrow.

h, m and *a* medium long, all of them thin, smooth (Fig. 2A). Chelicera normal, fixed and movable digits with a few blunt teeth. Trägårdh's organ narrow; setae *cha* and *chb* conspicuously barbed. Palp normal, palpal setation: 0-2-1-3-9 including solenidion ω on tarsus.

Epimeral region. Tectum of podocephalic fossa not projected, but slightly rounded under trochanter I. Epimeral enantiophysis *E2* and ventrosejugal enantiophysis *V* completely absent. Parastigmatic enantiophysis *S* well developed, tubercles *Sa* and *Sp* subtriangular; distal projection of anterior tubercle *Sa* very slightly longer than that of *Sp*. Discidium (*di*) completely absent. Epimeral setae medium long; setae *1a, 1b, 1c, 2a, 2b, 2c, 3a, 3b, 3c* and *4b* situated on distinctly developed microtubercles. Epimeral region II with three setae; epimeral setal formula: 3-3-3-4 (Fig. 2A).

Ano-genital region. Structure normal for genus; anogenital setae medium long, smooth. Adanal lyrifissure (*iad*) situated obliquely, at level slightly anterior to anal setae an_2. Genital plates with a few microtubercles (Fig. 2A).

Legs. Length measurements of leg segments are shown in Table 1. Distal tectum of trochantera III and IV very poorly projected. Setae *d* on genua I-III slightly longer and thicker than their coupled solenidia σ; solenidia φ of tibiae II and III slightly shorter than their associated setae *d*. Formula of leg setation (including famulus): I (1-7-4-4-20); II (1-6-4-5-17) III (2-4-3-4-17); IV (2-4-3-3-14); formula of solenidia: I (1-2-2); II (1-1-2); III (1-1-0); IV (0-1-0). Structure and setation of legs I-IV as shown in Figs. 2B-2E.

Material examined. Holotype: Cheonwang-bong (1915 m above sea level; the top of Mt. Jurisan), Sancheong-gun, Kyungsang Nam-do, southern Korea, 04 October, 1997. Forty-seven paratypes: same data as holotype. Thirty-four paratypes: Baikrockdam (1950 m above sea level, the top of Mt. Hallasan), Cheju-do (southernmost island of Korea), 16 October, 1997, Leg. S. S. Choi. The holotype and 76 paratypes (alcohol preserved) are deposited in the collection of the Laboratory of Plant Protection, College of Agriculture, Wonkwang University, Korea. Three paratypes (alcohol preserved) are deposited in the acarology collection of the National Science Museum, Tokyo, Japan and one paratype is deposited in the collection of the Department of Zoology, National University of Mongolia, Ulaanbaatar, Mongolia.

Table 1. Length of leg segments of *Dyobelba paucituberculata* sp. nov. (mm)

Legs	Trochanter	Femur	Genu	Tibia	Tarsus
I	–	174	60	76	166
II	–	124	48	68	152
III	78	110	50	72	154
IV	120	130	56	96	206

Remarks. Dyobelba paucituberculata sp. nov. is easily distinguishable from any other species of *Dyobelba* by the complete absence of the prodorsal enantiophyses *B, D*, epimeral and dorsosejugal enantiophyses *E2, V* and discidium, the presence of microtubercles at the bases of epimeral setae of *1, 2, 3*-series and *4b*, and the presence of two setae on trochanter IV. The other members of this genus have at least one pair of tubercles on the prodorsum and epimeral region, well-developed discidium and only one seta on trochanter IV.

In spite of these principal diagnostic features, the new species is somewhat resemble *D. biclavata*, described by Wang and Norton (1993) from China in two characters. In the original description of *D. biclavata*, one pair of epimeral tubercles *E2a* is indicated as *Ta* (Wang & Norton 1993). Such tubercles, however, are not found in the Mongolian specimens (Bayartogtokh, 2000). Another similar character is the presence of neotrichous setae (3 pairs) on epimeral region II of both the species. However, the new species can be clearly differentiated from *D. biclavata* in the 1) very long and distally flagellate sensilli as opposed to relatively short and straight sensilli in *D. biclavata*; 2) anteromedially directed spinae adnatae as opposed to anterolaterally curved spinae adnatae in *D. biclavata*; 3) laterally situated notogastral setae c_1, h_1 and h_2 as opposed to medially situated setae in *D. biclavata*; 4) centrally situated aggenital setae as opposed to laterally removed setae *ag* in *D. biclavata*; 5) presence of two and four setae on trochanter IV and femora III, IV, respectively as opposed to one and five setae in the respective segments of *D. biclavata*, and 6) much smaller body size.

Etymology. The specific name combining "*pau-ci*" and "*tuberculum*" is taken from the Latin meaning '*few* or *little*' and '*tubercle*', respectively, and refers to the complete absence of tubercles of the prodorsal and ventral enantiophyses *B, D, E2* and *V* and presence of only parastigmatic tubercles *Sa* and *Sp*.

Acknowledgments

We would like to express our thanks to Prof. R. A. Norton, State University of New York, Syracuse, USA for obtaining us copy of Jacot's paper and for the loan of

specimens of *D. tectopediosa* Jacot for comparative study. This study was partly supported by the Japan Society for the Promotion of Science.

References

Balogh, J. & P. Balogh, 1992. The Oribatid Mites Genera of the World. Vol. 1. 263 pp. Hungarian National Museum Press, Budapest.

Banks, N., 1947. On some Acarina from North Carolina. Psyche, 54: 110–141.

Bayartogtokh, B., 2000. Two species of damaeid mites (Acari: Oribatida: Damaeidae) from Mongolia, with notes on distribution of the genera *Epidamaeus* and *Dyobelba.* Biogeography, 2: 67–79.

Grandjean, F., 1960. *Damaeus arvernensis* n. sp. (Oribate). Acarologia, 2 (2): 250–275.

Jacot, A. P., 1938. Some new Western North Carolina moss-mites. Proc. Ent. Soc Wash., 40 (1): 10–14.

Marshall, V. G., R. M. Reeves & R. A. Norton, 1987. Catalogue of the Oribatida (Acari) of Continental United States and Canada. Mem. Ent. Soc. Canada, 139: 1–418.

Norton, R. A., 1978. Generic concepts in the Damaeidae (Acari: Oribatei). I. Three new taxa based on species of Nathan Banks. Acarologia, 20 (4): 603–622.

Norton, R. A., 1979. Damaeidae (Acari: Oribatei) collected by the Hungarian Soil Zoological Expeditions to South America. Folia. Ent. Hung., 32 (1): 55–64.

Norton, R. A. & N. A. Ryabinin, 1994. New alpine damaeid mite (Acari: Oribatida) from New Hampshire, USA. 35 (4): 373–380.

Wang, H. & R. A. Norton, 1993. A new species of the genus *Dyobelba* from China (Acari: Oribatida: Damaeidae). Acta Zootaxon. Sin., 18 (1): 66–69. (In Chinese with English summary)

Acceped Janunary 31, 2001/Accepted March 2, 2001

Acta Arachnologica Vol. 50, No. 1 掲載論文の和文要旨

トリノフンダマシはガを誘引しない（pp. 1–4）

宮下　直[1]，坂巻祥孝[2]，新海　明[3]（[1]〒113–8656 文京区弥生 1–1–1　東京大学大学院農学生命科学研究科；[2]〒890–0065 鹿児島市郡元 1–21–24　鹿児島大学農学部；[3]〒192–0352 八王子市大塚 274–29–603）

トリノフンダマシ類は，おもにガを捕食することが知られている．これらのクモがナゲナワグモのように特定の雄のガを誘引しているかを確かめるため，クモに捕獲されたガと飛翔中のガを採集し種組成と性比を調べた．餌となったガはさまざまな種の雌雄から構成されており，性比は 0.77 で雌に偏っていた．また，餌となったガと飛翔中のガの性比に違いはみられなかった．したがって，トリノフンダマシ類は特定の雄のガを誘引していないと考えられる．

タニマノドヨウグモの放置網における円網を張るクモ2種の盗み寄生的行動（pp. 5–11）

吉田　真（〒525–8577 滋賀県草津市野路東 1–1–1　立命館大学理工学部生物工学科 ）

タニマノドヨウグモの放置網における円網を張るクモの盗み寄生的行動を調査するため寄主の網にかかる昆虫の数を調べた．アシナガグモ（体長 3–9 mm）とタニマノドヨウグモの幼体（1–1.5 mm）が早朝に寄主が不在の網に侵入した．侵入者の盗みによって放置網上の昆虫の数は午前中に急速に減少した．侵入者の個体数は徐々に増加し，午後にはそれらのほとんどは放置網の中に小さい網を構築した．大型の侵入者は小型の侵入者を追い出し，より多くの昆虫を獲得した．寄主による防衛がないので，放置網における餌盗みは餌獲得には効果的な戦略かもしれない．

南西諸島産コガネヒメグモ属およびツリガネヒメグモ属（クモ目：ヒメグモ科）の2新種（pp. 13–16）

吉田　哉（〒990–2484 山形市篭田 2 丁目 7 番 16 号）

南西諸島産のヒメグモ科の 2 新種を，*Chrysso sasakii* オキナワホシミドリヒメグモ（新称，沖縄島，屋久島産）および *Achaearanea projectivulva* トガリヒメグモ（新称，沖縄島産）の名前で記載した．

韓国より得られた *Dyobelba* 属の 1 新種（ダニ亜綱：ササラダニ目：ジュズダニ科）（pp. 17–22）

バヤルトグトホ　バダムドルジ[1]，崔　星植[2]，青木淳一[3]（[1]モンゴル国立大学生物学部動物学研究室；[2]圓光大学校農科大学；[3]神奈川県立生命の星・地球博物館）

韓国より得られた *Dyobelba* 属の 1 新種を記載した．*Dyobelba paucituberculata* sp. nov. は，次の点によって同属の他種から区別される：前体部背面隆起（prodorsal enantiophyses）*B*, *D*, 腹面内隆起（epimeral and dorsosejugal enantiophyses）*E2*，*V*，および脇突起（discidium）を完全に欠くこと，基節板毛の数本（第 *1*－第 *3* 列 *D*，および *4b*）の基部に微小突起を持つこと，第 IV 脚転節に 2 本の毛を持つこと．*Dyobelba* 属の識別点およびこれまでに知られている本属の分布について記述した．

台湾初記録のカワリアシダカグモ属（新称），コアシダカグモ属，ミナミアシダカグモ属および4新種の記載（クモ綱：クモ目）（pp. 23–31）

P. Jäger[1]，小野展嗣[2]（[1]Institut für Zoologie, Johannes Gutenberg-Universität, Mainz, Germany；[2]〒169–0073 東京都新宿区百人町 3–23–1　国立科学博物館動物研究部）

台湾からアシダカグモ科の 4新種を以下のように命名して記載した：*Pseudopoda serrata*, *Pseudopoda recta*, *Sinopoda exspectata*, *Olios scalptor*. これら 3 属とも台湾から初記録となる．またアシダカグモ *Heteropoda venatoria* (Linné 1767) の 1 採集記録も報告した．

日本産のモリヒメグモ属，ハガタグモ属，カガリグモ属およびオオノヒメグモ属（クモ目：ヒメグモ科）（pp. 33–51）

吉田　哉（〒990–2484 山形市篭田 2 丁目 7 番 16 号）

日本産のヒメグモ科モリヒメグモ属，ハガタグモ属，カガリグモ属およびオオノヒメグモ属に検討を加え，これら 4 属に含まれる 17 種に検索表および簡単な記載を与えた．北海道大雪山高山雪田群落で採集されたモリヒメグモ属の 1 新種 *Robertus yasudai* new species（ヤスダモリヒメグモ，新称）を記載し，中国産の *Enoplognatha lordosa* Zhu & Song 1992（コガタコノハグモ，新称）を日本から新たに記録した．*Enoplognatha abrupta*（Karsch 1879）new combination（カレハヒメ